

**REMARKS**

**REVIEW**

The current application, as previously amended, sets forth claims 1-44. Claims 16-35 have been withdrawn as a result of a restriction requirement. Of the remaining claims, Claims 1 and 41 are independent claims. Claims 6, 7, and 9 have been cancelled.

A claim has been indicated as being objected to and that it should be renumbered as “claim 44.” Presently, no claims have been indicated as allowed in view of the prior art. Claims 1 - 5, 36-39 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over *Brown, et al* (U.S. Patent No. 5,288,619) in view of *Ergün, et al* (U.S. Pat. No. 6,440,057). Claims 8, 10-14 and 40 stand rejected in light of *Brown, et al*, in view of *Ergün, et al*, and in further view of *Perkins, Jr* (U.S. Patent No. 2,447,529). Claims 41-44 stand rejected over *Perkins, Jr*, in view of *Ergün, et al*.

**CLAIM OBJECTIONS**

Page 2, Item 1 of the action lists a claim objection that indicates a claim must be renumbered as Claim 44. Applicant requests the Examiner clarify which claim is to be renumbered.

## 35 U.S.C. § 103(a) REJECTIONS

The burden is on the Patent Office to establish a *prima facie* case of obviousness. *See* MPEP § 2142. To do so, the examiner must show, with factual evidence:

(1) some suggestion or motivation to combine the reference teachings;  
(2) that there is a reasonable expectation of success; and  
(3) the combination must teach or suggest all the claim limitations of the invention as a whole. *See id.*, (*citing In re Vraek*, 947 F.2d 488 20 USPQ2d 1438 (Fed. Cir. 1991)).

Under the first criteria, the suggestion, teaching or motivation to combine prior art references may flow, *inter alia*, from the references themselves, and the knowledge of one ordinary skill in the art or the nature of the problem to be solved. *See Winner International Royal Corp. v. Wang*, 202 F.3d 1340, 53 U.S.P.Q. 2d 1580 (Fed. Cir. 2000); *In re Fine*, 837 F. 2d 1071, 5 U.S.P.Q. 2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 U.S.P.Q. 2d 1941 (Fed. Cir. 1992). Although a reference need not expressly teach that the disclosure contained therein should be combined with another, showing of combinability, in whatever form must nevertheless be “clear and particular.” *Winner International Royal Corp.*, 202 F. 3d at 1586.

The second criteria in order to establish a *prima facie* case of obviousness, is that there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Obviousness does not require absolute

predictability; however, at least some degree of predictability is required. Evidence showing there is no reasonable expectation of success may support a conclusion of non-obviousness. *In re Rinehart*, 531 F.2d 1048, 189 U.S.P.Q. 143 (CCPA 1976).

The last criteria to establish a *prima facie* case of obviousness of a claimed invention is that all the claimed limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). “All words in a claim must be considered in judging the patentability of that claim against the prior art.” *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (CCPA 1970). Also, if an independent claim is not obvious under 35 U.S.C. § 103, then any claim depending therefrom is non-obvious. *In re Fine, supra*.

There can be no legally cognizable suggestion or motivation to combine or modify the references as the examiner proposes in light of the above amendments. Consequently, the Office cannot carry its burden of establishing a *prima facie* case of obviousness.

Claims 1-5 and 36-39. The Office rejected independent Claims 1 through 5 and 36 through 39 as being allegedly obvious over *Brown, et al* in view of *Ergün, et al.* This combination is legally improper as there is no recognizable motivation or suggestion to combine these two references. Also, because *Brown, et al*, is directed to an enzymatic transesterification system and method, the addition of an ultrasound device as proposed would not work.

*Brown, et al*, is directed to an “Enzymatic Method for Preparing Transesterified Oils” and describes only providing a mixture of stearic acid and edible liquid vegetable oil to a reactor in which the mixture is reacted with enzymes, specifically 1-, or 3- positionally specific lipase. *See Brown et al*, Abstract. The object of the process disclosed by *Brown, et al* is to modify a vegetable oil produce a low trans-acid, low saturated fatty acid, margarine oil product. Col. 1, ll. 17-26; Col. 7, ll. 10-46. The disclosure explains that vegetables oils may be modified in several different ways: dehydrogenation, chemical transesterification, enzymatic transesterification or genetic modification. Col. 3, ll. 47-52. The disclosure further provides that “the transesterification reaction is carried out by directed enzymatic transesterification of the liquid vegetable oil . . .” Col. 10, ll. 45-48. The enzymes disclosed for use in *Brown, et al*, are lipases that react exclusively with the 1- and 3- positions of the glycerol or triglyceride molecules of the vegetable oil component. *See* Col. 10, l. 48 – Col. 11, l. 20. *See also* Col. 19, ll. 34-57. Examples of such lipases include Rhizopus delemar and Mucor miehi, Aspergillus niger, rhizpus arrhizus, Rhizopus niveus, Muror javanicus, Rhizopus japonicus, Rhizopus oxyae. Col. 11, ll. 7-11. The reaction chamber (Fig. 1 at 110) is described as containing the enzyme catalyst where the stearic acid, vegetable oil mixture is caused to flow over, and then come in contact with the enzyme catalyst. Col. 11, ll. 25-29; Col. 12, ll. 5-10 (“The transesterification mixture is contacted with the immobilized enzyme . . .”); Col. 13, ll. 19-27 (“The soybean oil, stearic acid, hexane and water are introduced into enzymatic

transesterification reactor . . . the reactor contains an immobilized 1-, 3- positionally specific lipase.”). It is important to note that the transesterification process of *Brown, et al.* is contemplated to achieve equilibrium (i.e., transesterification is 50-90% complete) in 0.5 hours to 100 hours depending upon the reactant activity, and other conditions. Col. 12, ll. 10-13.

On the other hand, the transesterification system invented by Applicant employs ultrasonic directly in the reaction chamber through the use of an ultrasonic horn extending into the interior of the chamber such that the reactant mixture is directly irradiated, i.e., there is no intervening medium through which the ultrasonic energy passes before irradiating the mixture. As described, this enhances the reaction of the fats, the alkaline solution and the alcohol resulting in a rapid transesterification of the fatty acids, e.g., in 20-30 seconds. The ultrasonic energy is provided at frequencies between 20 and 50 KHz and at power densities of between 18 to 65 Ws/ml. It should be noted that those skilled in the art would consider this power density levels to be the “high power” range for ultrasound applications. *See e.g.*, U.S. Pat. No. 5,582,829 “*Sonicated Borrelia Burgdorferi Vaccine*” to Alliger, et al., December 10, 1996 Col. 9, l. 60 – Col. 10, l. 38 (describing how high power ultrasound induces cavitation effects in liquid media and their effect on microbials).<sup>1</sup>

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<sup>1</sup> Intensity is related in Alliger, et al in power per unit area, where in the present application it is described in power per unit volume.

*Ergün, et al* teaches a system for producing fatty acid methyl ester through transesterification of animal or vegetable fats by combining an alcohol and an alkaline solution in a mixing vessel, and then supplying the resulting mixture to a reaction chamber simultaneously with a fat. Fig. 1; Col. 7, ll. 25-40 The reaction chamber, which is maintained at high pressure, is disclosed simply to have a dynamic emulsifier, a crack emulsifier, or a turbulator (Col. 8, ll. 51-55). This mixture is then distilled. *Ergün, et al* suggests advantages to using an ultrasound device (Col. 8, ll. 55-58), but fails to disclose description of a structure that teaches where and how such an ultrasound device may be mounted to a reaction chamber.

The § 103 rejection of Claim 1 based on *Brown et al* and *Ergün, et al*, is in error. The Office Action fails to identify a legally cognizable suggestion for combining *Brown, et al* and *Ergün, et al*. In this regard, the Office Action states: “it would have been obvious to one having ordinary skill in the art at the time of the invention to modify *Brown*’s reaction chamber by placing an ultrasound generator within in (sic) it as taught by *Ergun* since ultrasound results in englaring boundary surfaces among reactants that decreases reaction times.” Office Action, page 3. However, as a matter of law and fact, this is not a proper suggestion for combining *Brown, et al* and *Ergün, et al*.

Turning first to the legal error, Applicants wishes to remind the Office of the bedrock legal principles for rejecting a claim under 35 U.S.C. § 103.

Specifically, in *In re Rouffet*, 47 U.S.P.Q.2d 1453 (Fed. Cir. 1998) the Federal Circuit explained:

To reject claims in an application under section 103, an examiner must show an unrebutted prima facie case of obviousness. In the absence of a proper prima facie case of obviousness, an applicant who complies with the other statutory requirements is entitled to a patent.

Id. at 1455 (citations omitted and emphasis added).

In *Rouffet*, the Examiner had rejected the pending claims on a combination of references. The Board sustained the Examiner. However, the Federal Circuit reversed the Board's decision and ruled that the Examiner's rejections were legally impermissible because they failed to demonstrate a suggestion for combining the references in the manner proposed by the Examiner. As explained by the Federal Circuit:

As this court has stated, "virtually all [inventions] are combinations of old elements." Therefore, an examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be "an illogical and inappropriate process by which to determine patentability." To prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the examiner to show a motivation to combine the references that create the case of obviousness.

Id. at 1457-58 (citations omitted and emphasis added). These principles have not been followed in rejecting Claim 1. Merely stating an advantage or possible advantage of combining references, as was done to reject Claim 1, is not the same as “show[ing] a motivation to combine the references.”

On the contrary, in order to establish a *prima facie* case of obviousness, there must be actual evidence of a suggestion to modify a prior art reference or to combine two prior art references, and the suggestion to combine or modify the prior art must be clear and particular. *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). In order to establish a *prima facie* case of unpatentability, particular factual findings demonstrating the suggestion to combine must be made. *See, e.g., Ecolochem Inc. v. Southern California Edison*, 56 U.S.P.Q.2d 1065, 1072-73 (Fed. Cir. 2000); *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617-1618 (Fed. Cir. 1999). Indeed, the law is quite clear that an obviousness rejection must be based on facts, not conjecture.

The Supreme Court... foreclosed the use of substitutes for facts in determining obviousness under section 103. The legal conclusion of obviousness must be supported by facts. Where the legal conclusion is not supported by facts it cannot stand.

*In re Warner*, 379 F.2d 1011, 1017 (C.C.P.A. 1967). This longstanding principle has been followed to date. For example, in the unpublished Board decision, *Ex parte Megens*, App. No. 1999-0277 (B.P.A.I. Oct. 29, 1999), the Board stated:

Rejections based on 35 U.S.C. § 103 must rest on a factual basis. *In re Warner*, 379 F.2d 1011, 1017, 154 USPQ 173, 177-78 (CCPA 1967). In making such a rejection, an

examiner has the initial duty of supplying the requisite factual basis and may not, because of doubts that the invention is patentable, resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in the factual basis. *Id.*

The examiner's conclusion that it would have been obvious to incline Phillips' loading dock floor 65 rests on the completely unfounded assumption that it would be desirable to drain liquid from the floor. The Phillips reference, however, is devoid of any indication that liquid might accumulate on the floor or that such accumulation would pose a problem even if it did occur. It is therefore apparent that the examiner has resorted to improper speculation and hindsight reconstruction to overcome the admitted deficiency of Phillips vis-à-vis the subject matter recited in claim 1.

*(Megens at Pages 4-5)(emphasis added).*

This is precisely the situation presented here. The "suggestion" in support of the rejection of Claim 1 amounts to nothing more than a speculative statement that, given the alleged presence of the claim elements in the prior art and an advantage that combining these elements would allegedly achieve, a person skilled in the art would have found it obvious to combine the references to create the claimed invention. The problem with this approach is that it effectively eliminates the requirement of identifying a suggestion for combining references from the obviousness analysis. More specifically, the analysis present in the Office action proceeds in the following manner:

- a) What elements are present in the pending claims?
- b) Can these elements be found in prior art references?

- c) If they can be found, and the references themselves provide no suggestion for combining these elements, can some end or advantage be identified to combine the elements in the manner proposed in the Applicants' claims?
- d) If so, combine the elements in the manner proposed by the Applicants and reject the pending claims.

This mode of analysis is, of course, deeply flawed. Specifically, as noted by the Federal Circuit in the *Rouffet* quote identified above, all of the elements of most claimed inventions can almost always be found in the prior art. Therefore, the answer to step "b" above will almost always be "yes". Since it is a statutory requirement that all inventions have utility, there will also always be an identifiable end or advantage in combining the elements of the prior art in the manner proposed by any claim (e.g., if there was no purpose to an element in a claim it would not be included in the claimed apparatus, after all, who would pursue a claim with superfluous elements or a claim with no utility?). Therefore, if the "suggestion" requirement of 35 U.S.C. § 103 can be met by merely identifying any end or advantage which will be achieved by combining the elements of the prior art references, the suggestion requirement can always be met and is utterly meaningless.

This inherent flaw in the analysis employed in rejecting Claim 1 is elucidated by viewing the alleged "suggestion" the Office action identifies in support of the rejection. As noted above, in rejecting Claim 1, the Office action states: "it would have been obvious to one having ordinary skill in the art at the time of the

invention to modify *Brown's* reaction chamber by placing an ultrasound generator within in (sic) it as taught by *Ergun* since ultrasound results in enlarging boundary surfaces among reactants that decreases reaction times.” The first part of the statement, namely, “It would have been obvious … to employ” is merely boilerplate language that does not address the suggestion requirement. The second part of the statement, namely, it would have been obvious for one having ordinary skill in the art at the time of the invention “to modify *Brown's* reaction chamber by placing an ultrasound generator within in (sic) it as taught by *Ergun*” simply states what the proposed modification of the primary reference is to be; in this case modifying Brown et al to include an ultrasound generator. This second part of the statement, thus, describes the proposed modification, but offers no explanation of a motivation for making that modification. The final part of the statement, namely, “since ultrasound results in enlarging boundary surfaces among reactants that decrease reaction times,” must, then be the alleged “motivation” for modifying *Brown, et al.*

However, while it is true that one possible advantage of an ultrasound generator is reducing reaction times by increasing the boundary surfaces of the reactants, that is not a suggestion in and of itself for using an ultrasound generator in *Brown, et al.* “The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification.” In re Fritch, 23 U.S.P.Q.2d 1780, 1783-84 (Fed. Cir. 1992)(emphasis added). Here, the Office action does not identify

any evidence in the prior art indicating or in any way suggesting the desirability modifying *Brown et al* in the manner proposed. It only identifies an old element that has an inherent property. Indeed, the Office action's naked, conclusory statement amounts to nothing more than stating "A person of ordinary skill in the art would be motivated to modify *Brown et al* to include an ultrasound generator because they would want to gain a benefit from having an ultrasound generator." In other words, the Examiner is effectively saying that the motivation of adding an ultrasound generator to *Brown, et al*, is to have the inherent benefit of adding an ultrasound generator. Of course, such circular reasoning (i.e., add "X" to have "X") cannot be a legally proper tool for identifying a suggestion for combining references. If it were, no combination of old elements would ever be patentable since one can always nakedly state, a person would be motivated to add old element X from one reference to another reference because adding element X offers an advantage (again, if adding "X" had no advantage, who would ever claim it?). Simply put, there is *always* an advantage to combining old elements that can be identified through hindsight *once that combination is known*. It should be quite clear from the above that merely identifying an advantage for adding an old element to a combination of elements is not a proper suggestion for making that combination. The MPEP further proves this point. In particular, MPEP § 2144 states that "the strongest rationale for combining references is a recognition... in the prior art or... based on established scientific principles or legal precedent, that

some advantage would have been produced by their combination.” The MPEP cites

*In re Sernaker*, 702 F.2d 989, 994-95 (Fed. Cir. 1983) to support this proposition.

Looking at the *Sernaker* case, we see that the Federal Circuit states: “The lesson of

this case appears to be that prior art references in combination do not make an

invention obvious unless something in the prior art references would suggest the

advantage to be derived from combining their teachings.” *Sernaker*, 702 F.2d at 995-

96 (emphasis added). Notice that this statement does not state that it is obvious to

combine references simply because there is an advantage to doing so. On the

contrary, it carefully states that there can be no obviousness ruling unless something

in the art suggests an advantage to combining the references. The advantage itself is

not the suggestion, but rather the Court makes it clear that something else suggests

the advantage.

The MPEP quote noted above is similar. It states that the “strongest

rationale for combining references is a recognition... in the prior art or... based on

established scientific principles or legal precedent that some advantage or expected

beneficial result would have been produced by their combination.” (MPEP, Page

2100-127) (emphasis added). This, of course, does not state that the strongest

rationale for combining references is the mere presence of an advantage to doing so.

Instead, as in *Sernaker*, the strongest rationale is a recognition (i.e., a suggestion) in the

art that an advantage will result.

Turning back to the rejections at issue, rather than identifying something in the art that suggests an advantage to making the combination, the Office action just looks for the advantage itself and mislabels that advantage as “suggestion.” As explained above, this is a literal elimination of the suggestion requirement. Since there is always an advantage to a claimed element (or why would you claim it?), the Office Action’s misplaced view of an advantage as the suggestion inherently renders all combinations of old elements unpatentable precisely because it eliminates the suggestion requirement from the analysis. Clearly, neither the MPEP section noted above nor the *Sernaker* case upon which that MPEP section rests for authority stands for the proposition that an advantage of an element is a suggestion in and of itself for including that element in a combination.

In rejecting Claim 1, the Examiner concedes that *Brown et al* fails to disclose the use of ultrasound in the reaction process and so proposes that an ultrasound device only suggested by *Ergün, et al*, may be combined with *Brown, et al*, to achieve the claimed invention. As a motivation, the Office offers that “it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Brown’s reaction chamber by placing an ultrasound generator within in (sic) it as taught by Ergun since ultrasound results in enlarging boundary surfaces among reactants that decreases reaction times.” However, the Examiner has provided no “clear and particular” evidence that reducing the reaction time through enlargement of reactant boundary layers is contemplated in an enzymatic

transesterification reaction, or even desired in *Brown, et al*.<sup>2</sup> Thus, the Office Action fails to meet the criteria for establishing a suggestion or motivation under *Sernaker* and the MPEP as set forth above in that the Office Action has not shown clear and particular evidence that those skilled in the art would recognize the desirability of adapting the reactor of *Brown et al* to include an ultrasound generator.

Indeed, it is known in the relevant art that high intensity ultrasound, as is used in the present application, has a tendency to deactivate or denature enzymes. *See* TIMOTHY J. MASON & JOHN P. LORIMER, APPLIED SONOCHEMISTRY: THE USES OF POWER ULTRASOUND IN CHEMISTRY AND PROCESSING, Ch. 4.2 (2002) (a copy of the relevant portion of which is enclosed herewith) (“If temperature is not controlled then sonication could result in a large temperature increase which will lead to the denaturation (deactivation) of enzymes”). Since *Brown, et al*, is limited to enzymatic transesterification, adding an ultrasound device to the reaction would not speed transesterification but would slow or even inhibit reaction of the enzymes with the stearic acid/fatty acid mixture. Therefore, if used in the *Brown, et al*, reaction vessel with its immobilized enzymes, the ultrasound of *Ergün, et al*, would render the process disclosed by *Brown et al* useless. It is well-settled law that “if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed

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<sup>2</sup> *Brown, et al* discusses increasing reaction speed by lowering equilibrium criteria by increasing the amount of stearic acid used. *See Brown et al*, Col 12, ll. 23-27. But this is not a resulting from a mechanical or thermodynamic variation to the process to increase the reaction speed as would result from the use of ultrasonic energy.

modification.” MPEP §2143.01, Part V, *citing In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). *See also Tec Air, Inc., v. Denso Mfg. Michigan, Inc.*, 192 F.3d 1353, 1360 (Fed. Cir. 1999) (“If when combined, the references ‘would produce a seemingly inoperative device,’ then they teach away from their combination.” *quoting In re Sponnoble*, 405 F.2d 578, 587 (C.C.P.A. 1969)).

Thus, there is no clear and particular evidence of a suggestion or motivation to combine *Brown et al* with *Ergün, et al*, in the manner proposed in the Office Action. However, there is evidence in the art to show that the proposed modification would render *Brown et al* unsatisfactory for its stated purpose, i.e., provide an enzymatic transesterified margarine oil. For this reason, there is no suggestion or motivation to combine *Brown, et al*, with *Ergün, et al*, in the manner proposed. Consequently, there is no *prima facie* case of obviousness. In view of the foregoing, applicants respectfully submit that the § 103 rejection of Claim 1 must be withdrawn because it fails to identify a legally proper suggestion for combining the prior art references in the manner proposed by the Office action. In other words, the Office has failed to establish a *prima facie* case of obviousness under 35 U.S.C. § 103. On this basis alone, the rejections of Claim 1 and all claims depending therefrom must be withdrawn.

For a similar reason, a *prima facie* case fails because there is no demonstrated likelihood that the proposed combination would work. In *Ex parte Evans, et al*, Appeal No. 2006-3308, Bd. Pat. App. & Interf., Feb. 2007, available at

2007 WL 630242, the examiner rejected claims directed to a method for producing an aluminum lithographic sheet using aluminum alloys without additional grain refiners over the combination of two references which the applicants contended taught away from each other. The Board of Patent Appeals and Interferences reversed the Examiner, because, as is the case here, the examiner provided not even a reasonable expectation that the combination would work. *See id.* (“[T]he Examiner has failed to explain why . . . one of ordinary skill in the art would, nonetheless, have had a reasonable expectation of success.”).

In the instant case, those skilled in the art recognize that high intensity ultrasound denatures enzymes making such substances less reactive. *See MASON & LORIMER, supra* This argues against adding the ultrasound generator of *Ergün, et al.*, to the enzymatic transesterification reactor of *Brown, et al.*, because the reaction would be slowed or prohibited. Therefore, there is no evidence in the record to show that the combination of *Brown, et al.*, and *Ergün, et al.*, would succeed. Thus, the second requirement of a *prima facie* case is not met.

Accordingly, two of the three requirements for a *prima facie* case of obviousness are lacking. Applicant respectfully requests that the rejection under §103 be withdrawn.

Although, the rejection should be withdrawn based upon the above remarks, the third element of a *prima facie* case is also missing. The combination still does not teach every element of Claim 1. Namely, it does not teach or suggest a

reactor with an ultrasonic device having an ultrasonic transmission horn inserted into the chamber. Page 3 of the Detailed Action provides the conclusory statement that “Ergun teaches placing an ultrasound (sic) in his reaction chamber (figure 1:8, col. 7, lines 59-62 and col. 8, lines 54-58).” A close analysis of Figure 1 of *Ergün, et al*, does not disclose an ultrasound device at all, much less an ultrasound device having a horn inserted into the chamber. The description accompanying reference numeral 8 of Figure 1 refers to that component only as a “transesterification section or reaction section” Col. 7, ll. 34-5, l. 43. The excerpts referenced in the office action only say that it is possible to use ultrasound with the reaction, but that is far from teaching and enabling the structure set forth in Claim 1.<sup>3</sup> Applicant respectfully submits that the proposed combination still does not teach all of the limitations of Claim 1 and therefore, the Office Action fails to establish a *prima facie* case of obviousness. As a result, the rejection is due to be withdrawn.

Claims 2-5, 36-39. Claims 2 through 5, and 36 through 39 depend from Claim 1. Applicant submits that in light of the above amendments and the remarks as discussed above, Claim 1 is now non-obvious under 35 U.S.C. § 103(a). Any claim depending from Claim 1 is now non-obvious as well. *See* MPEP § 2143.03.

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<sup>3</sup> “Enlargement of the border surfaces is also possible by means of ultrasound. It is therefore quite conceivable to equip the reaction section with an ultrasound device.” Col. 7, ll. 59-62. This sentence is repeated at Col. 8, ll. 55-7.

Accordingly, Claims 2 through 5, and 36 through 39 are nonobvious and Applicant requests withdrawal of the rejection as to these claims.

Claims 8, 10-14 and 40. These claims were rejected as being unpatentable over *Brown, et al*, in view of *Ergun, et al*, and in further view of *Perkins, Jr.* Claims 8, 10 through 14 and 40 depend from Claim 1. Applicant submits that in light of the above amendments and the remarks as discussed above, Claim 1 is now nonobvious under 35 U.S.C. § 103(a). Any claim depending from Claim 1 is now nonobvious as well. *See* MPEP § 2143.03. Accordingly, Claims 8-15, and 40 are nonobvious and Applicant requests withdrawal of the rejection as to these claims.

Claims 41-44. The Office Action rejects Claims 41 through 44 as obvious in light of *Perkins, Jr.* in view of *Ergün, et al*. Claim 41 has been amended to include the limitation that the reaction chamber must have the ultrasonic horn extending into the interior of the reaction chamber. *Perkins, Jr.*, as conceded in the Office Action, does not discuss or suggest the use of ultrasound in its conditioning element (Fig 1: 123). As discussed above, *Ergün, et al*, mentions that ultrasound may be used to speed reaction time, but it does not in any way suggest a structure of a reaction chamber with an inlet in its bottom portion and a ultrasonic horn extending into the chamber's interior so that the received emulsion is directly exposed to the ultrasonic energy as it enters the chamber.

As set forth above, the *prima facie* case of obviousness requires that the combination proposed to render Claim 41 obviousness teach all of the limitations of Claim 41. Neither *Perkins, Jr.* nor *Ergün, et al.* teach or suggest all of the limitations of Claim 41 as amended above. Thus, Applicant respectfully request withdrawal of the rejection as to Claim 41. In addition, since Claims 42 through 44 depend from Claim 41, the rejection should be withdrawn as to those claims as well.

**CITED RELEVANT PRIOR ART**

It is not believed that any of the prior art cited but not relied upon, alone or in combination either with each other or other cited prior art, teaches, discloses, suggests, or makes obvious the claimed features of the present invention.

## CONCLUSION

In view of the foregoing amendments and comments, Applicant respectfully requests withdrawal of the current grounds of rejection and the issuance of a formal Notice of Allowance. The Examiner is invited to telephone the undersigned at his convenience if there are any questions arising from consideration of this amendment in order to permit early resolution of the same.

March 27, 2007

Respectfully submitted,

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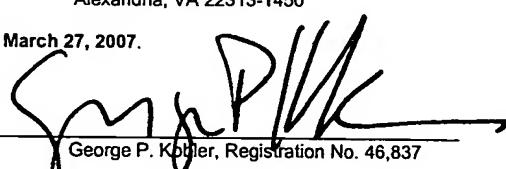
  
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